WHAT IS CLAIMED IS:

1. A high frequency dielectric ceramic composition comprising:

a major component which contains a rare earth element (Re), Al, Sr, and Ti as metal elements, wherein a composition formula of the major component is expressed by a molar ratio of aRe_2O_3 - bAl_2O_3 - cSrO - $dTiO_2$ in which a, b, c, and d satisfy the following formula;

$0.113 \leq a \leq 0.172$,

$0.111 \leq b \leq 0.171$,

$0.322 \leq c \leq 0.388$,

$0.323 \leq d \leq 0.396$, and

$a + b + c + d = 1.000$; and

a sub-component which contains 0.01 to 2 parts by weight of Fe as an element on the basis of Fe_2O_3, with respect to 100 parts by weight of the major component.

2. The high frequency dielectric ceramic composition according to Claim 1, wherein the rare earth element (Re) comprises La.

3. The high frequency dielectric ceramic composition according to Claim 1, wherein the rare earth element (Re) comprises La and at least one other rare earth elements.

4. The high frequency dielectric ceramic composition according to Claim 1, wherein the dielectric ceramic composition has a dielectric constant of at least 30.

5. The high frequency dielectric ceramic composition according to Claim 1, wherein the dielectric ceramic composition has a Q x f value of at least 40,000 GHz.

6. The high frequency dielectric ceramic composition according to Claim 1, wherein an absolute value of a temperature coefficient of a resonant frequency of the dielectric ceramic composition is within 30 ppm/°C.

7. The high frequency dielectric ceramic composition according to Claim 1, wherein the dielectric ceramic composition has a dielectric constant of at least 30, a Q x f value of at least 40,000 GHz, and an absolute value of a temperature coefficient of a resonant frequency within 30 ppm/°C.

8. A dielectric resonator, comprising:

a dielectric ceramic comprising:

a major component which contains a rare earth element (Re), Al, Sr, and Ti as metal elements, wherein a composition formula of the major component is expressed by a molar ratio of aRe_2O_3 - bAl_2O_3 - cSrO - $dTiO_2$ in which a, b, c, and d satisfy the following formula;

$0.113 \leq a \leq 0.172$,

$0.111 \leq b \leq 0.171$,

$0.322 \leq c \leq 0.388$,

$0.323 \leq d \leq 0.396$, and

$a + b + c + d = 1.000$; and

a sub-component which contains 0.01 to 2 parts by weight of Fe as an element on the basis of Fe_2O_3, with respect to 100 parts by weight of the major component.

9. The dielectric resonator according to Claim 8, further comprising a metallic case within which the dielectric ceramic is arranged.

10. The dielectric resonator according to Claim 9, wherein the dielectric ceramic is supported by a support within the metallic case.

11. The dielectric resonator according to Claim 8, wherein the dielectric resonator is a TE01δ mode dielectric resonator.

12. The dielectric resonator according to Claim 8, wherein the dielectric ceramic includes a through-hole, an inner conductor formed in the through-hole, and an outer conductor formed on at least a portion of a periphery of the dielectric ceramic.

13. The dielectric resonator according to Claim 8, wherein the dielectric resonator is a TEM mode dielectric resonator.

14. The dielectric resonator according to Claim 8, wherein the dielectric ceramic has a dielectric constant of at least 30, a Q x f value of at least 40,000 GHz, and an absolute value of a temperature coefficient of a resonant frequency within 30 ppm/°C.

15. The dielectric resonator according to Claim 8, wherein the rare earth element (Re) comprises La.

16. The dielectric resonator according to Claim 8, wherein the rare earth element (Re) comprises La and at least one other rare earth elements.

17. A dielectric filter comprising the dielectric resonator defined in Claim 8 and an external coupling means coupled to the dielectric ceramic.

18. The dielectric filter according to Claim 17, wherein the external coupling means include an input terminal coupled to the dielectric ceramic; and an output terminal coupled to the dielectric ceramic.

19. A dielectric duplexer comprising at least two dielectric filters, input-output connecting means connected to the dielectric filters, respectively, and an antenna-connecting means connected to both of the dielectric filters, at least one of the dielectric filters being the dielectric filter defined in Claim 17.

20. A communication device comprising the dielectric duplexer defined in Claim 19, a transmission circuit connected to at least one of the input-output connecting means, a reception circuit connected to a different one of the input-output connecting means that the transmission circuit is connected, and an antenna connected to the antenna-connecting means.